

**REMARKS**

This response is submitted in response to the Final Office Action dated December 16, 2002, and respectfully requests that the Examiner reconsider the rejection of the claims as set forth therein in view of the following Remarks.

The applicant filed a Response Under 37 CFR §1.111 on October 8, 2002 to the non-final second Office Action of July 5, 2002. The Final Rejection of December 16, 2003 is in reply to the applicant's Response After Final Rejection Under 37 C.F.R. §1.116 filed on October 8, 2002. The Final Rejection essentially repeats the rejections of the non-final second Office Action of July 5, 2002.

**Allowable Subject Matter: Claims 4, 6, 10, 12, 16 and 18**

As noted previously in the non-final second Office Action of July 5, 2002, the Examiner again states that claims 4, 6, 10, 12, 16 and 18 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten into independent form including all of the limitations of the base claim and any intervening claims.

**35 U.S.C. §102(e) Rejections: Claims 1-3, 5, 7-9, 11, 13-15 and 17**

The Examiner has again rejected claims 1-3, 5, 7-9, 11, 13-15 and 17 under 35 U.S.C. 102(e) as being anticipated by Iwane (filed July 2, 1996 – issued February 17, 1998).

**Claims 1, 7 and 13**

With respect to claims 1, 7 and 13, the applicant had argued that if in Iwane the internal layer is formed **between** conductor layers 1 to 4, then Iwane **cannot** disclose that a first ground layer *is formed on an upper surface* of said internal layer and a second ground layer *formed on a lower surface* of said internal layer, as recited by claims 1 and 13, **nor can Iwane disclose** *covering an upper surface of said internal layer with a first ground layer and covering a lower surface of said internal layer with a second ground layer*, as recited by claim 7.

The applicant maintained that *Iwane cannot disclose the limitations of claims 1, 7 and 13 because Iwane discloses that the only ground layers are conductive layers 3a and 3b, and these are shown as sandwiched between the internal layer formed between conductor layers 1 to 4 forming the internal layer.*

In the Response to Arguments, the Examiner maintains that if the applicant's arguments are correct, the applicant has described on page 7, lines 8-23, the specification, and shown in FIGS. 2 and 4 (**4a, 5, 1, 2, 3, and 4b**) of the instant application, the same sort of structure for a flexible board. The Examiner maintains that the applicant's specification describes and shows:

a first ground layer **1** and second ground layer **3** (anticipated by Iwane's layer **3a** and **3b** of FIG. 2);

a first cover layer **4a** which covers the surface of the first ground layer **1** and a second cover layer **4b** which covers a surface of the second ground layer (anticipated by Iwane's layers **1** and **4** of FIG. 2); and

insulating adhesive layers 5 sandwiched between the adjacent layers (as anticipated by Iwane's insulation layers 5a-5e).

The Examiner maintains that the applicant's invention, as claimed and supported by the specification and figures, must disclose a first ground layer formed on an upper surface of said internal layer and a second ground layer formed on a lower surface of said internal layer, as recited in claims 1 and 13. The Examiner also maintains that the present invention must also disclose covering an upper surface of said internal layer with a first ground layer and covering a lower surface of said internal layer with a second ground layer, as recited by claim 7. The Examiner therefore asserts that the present invention is claimed and supported to show, similar to Iwane, a structure of a flexible board in which ground layers 1 and 3 are sandwiched between the internal layers formed between layers 4a and 4b, which include the insulation layers 5 and ground 1 and 3 and the "internal" layer 2. The Examiner asserts that the claimed internal layer 2 is anticipated by Iwane's conductor layer 2b which is a part of and therefore formed between conductive layers 1 to 4.

In response, the applicant has now prepared a comparison table between FIG. 2 of Iwane et al and the present invention of claims 1, 7 and 13, and also claims 2, 8 and 14, as well as claims 3, 9 15. The comparison table is enclosed with this response.

Based on the comparison table to Iwane et al, the applicant maintains that Iwane does not disclose a first ground layer formed on an upper surface of said internal layer, nor does Iwane disclose a second ground layer

formed **on** a lower surface of said internal layer, as recited by claims 1 and 13. Nor does Iwane et al disclose covering an upper surface of said internal layer with a first ground layer, nor covering a lower surface of said internal layer with a second ground layer, as recited by claim 7.

Rather, in Iwane, the first ground layer 3a is formed **on** the insulation layer 5c. Forming a layer **on** a surface, or covering an upper surface of said internal layer or covering a lower surface of said internal layer, implies to one of ordinary skill in the art that the layer is formed directly on a surface without any intermediate materials therebetween.

Therefore, the applicant maintains that claims 1, 7 and 13 patentably distinguish over Iwane by reciting that the ground layers are formed **on** the upper and lower surfaces of the internal layer, as recited by claims 1 and 13, and by reciting covering a an upper surface and covering a lower surface of said internal layer, as recited by claim 7.

Consequently, the applicant respectfully requests that the Examiner withdraw the rejections of claims 1, 7 and 13.

#### **Claims 2, 8 and 14**

The applicant maintains that in the Response to Arguments, the Examiner has not identified a corresponding component in Iwane to the cover layers recited by claims 2, 8 and 14, and as supported by 4a and 4b of FIGS. 2 and 4. In the text of the rejections of claims 2, 8 and 14, the Examiner asserts that Iwane et al discloses a *first cover layer 1* formed over a surface of said first ground layer. The Examiner refers to Fig. 2, and column 3, lines 40-44. Similarly, the

Examiner asserts that Iwane et al discloses a *second cover layer 4* formed over a surface of said second ground layer. In other words, the Examiner again asserts that Iwane, FIG. 2, conductor layer 1 is now equivalent to a first cover layer formed over a surface of said first ground layer, and conductor layer 4 is now equivalent to a second cover layer formed over a surface of said second ground layer, as recited by claim 2.

In response, the applicant respectfully maintains as before that the only ground layers in Iwane are conductive layers 3a and 3b and these are sandwiched between the internal layer formed between conductor layer 1 to 4. Therefore, the first and second cover layers 1 and 4 cannot be formed over a surface of said first and second ground layers, as recited by claims 2, 8 and 14.

The applicant notes further that Iwane, column 3, lines 40-44, cited by the Examiner, disclose the following:

*The conductor layer 1 is formed on the surface of the insulation layer 5a (on the surface of the printed board 10) and the conductor layer 4 is positioned on the surface of the insulation layer 5e (on the back of the printed board 10).*

Therefore, in Iwane et al, the conductor layers 1 and 4 are positioned on the surface of the insulation layers 5a and 5e, respectively, and not on the ground layers. That is, Iwane does not disclose a first cover layer formed over a surface of said first ground layer, nor does Iwane disclose a second cover layer formed over a surface of said second ground layer, as recited by claims 2, 8 and 14.

Consequently, claims 2, 8 and 14, by reciting cover layers formed over a surface of ground layers, patentably distinguish over Iwane. As a result, the applicant respectfully requests that the Examiner withdraw the rejection of claims 2, 8 and 14.

**Claims 3, 9 and 15:**

The Examiner asserts that insulation layers 5a to 5e of Iwane, FIG. 2, are electrically insulating adhesive layers sandwiched among said internal layer, that the that first and second ground layers 3a and 3b are analogous to first and second ground layers, and that conductor layers 1 and 4 are analogous to first and second cover layers, as recited by claims 3, 9 and 15.

In response, in view of the applicant's arguments with respect to claims 2, 8 and 14 that conductor layers 1 and 4 of Iwane et al are not ground layers as recited by claims 3, 9 and 15, the applicant respectfully maintains that claims 3, 9 and 15 patentably distinguish over Iwane. As a result, the applicant requests that the Examiner withdraw the rejection of claims 3, 9 and 15.

**Claims 5, 11 and 17:**

The Examiner asserts that the holes 7a to 7c connecting conducting layers 1 and 4 of Iwane, FIG. 2, and which pass through ground layers 3a and 3b and insulation layers 5a to 5e, are analogous to a plurality of through holes formed throughout said first ground layer, said internal layer, and said second ground layer, as recited by claims 5, 11 and 17.

In response, the applicant respectfully maintains that claims 5, 11 and 17 stand together with the arguments presented for claims 1, 7 and 13.

Therefore, claims 5, 11 and 17 patentably distinguish over Iwane. The applicant requests that the Examiner withdraw the rejection of claims 5, 11 and 17.

The applicant respectfully requests consideration of the foregoing Remarks. The foregoing Remarks establish the patentable nature of all of the unallowed claims in the application, i.e., claims 1-3, 5, 7-9, 11, 13-15 and 17. No new matter has been added, wherefore, early and favorable reconsideration and issuance of a Notice of Allowance are respectfully requested.

Respectfully submitted,



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**COMPARISON BETWEEN IWANE FIG. 2 (US 5,719,750) AND CLAIMS**

<b>Item No.</b>	<b><u>Iwane FIG. 2</u> <u>Description</u></b>	<b>Claim</b>	<b>Supported by Figs. 1-4 Item Nos.</b>	<b><u>Description</u></b>
10	printed board	1: A flexible board 7: A method of fabricating a flexible board, comprising the steps of 13: A cellular phone including a flexible board		
6a, 6b, 6c	electronic components			
1	<p><i>conductor layer</i></p> <p><i>Col. 3, lines 40-49:</i>  <i>..A printed board 10 is provided with six conductor layers 1, 2a, 3a, 2b, 3b and 4, and five insulation layers 5a, 5b, 5c, 5d and 5e. The <u>conductor layer 1</u> is formed on the surface of the <u>insulation layer 5a</u> (on the surface of the printed board 10) and the conductor layer 4 is positioned on the surface of the <u>insulation layer 5e</u> (on the back of the printed board 10). The <u>conductor layer 4</u> is made of a thin copper film or other similar material,</i></p>	2, 8, 14: a first cover layer formed over a surface of said first ground layer	4a	first cover layer



	<i>and ....</i>			
5a	insulation layer	3, 9, 15: electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers.	5	electrically insulating adhesive layer
2a	conductor layer			
5b	insulation layer			
3a	ground layer	1, 13: a first ground layer formed on an upper surface of (said) internal layer 7: covering an upper surface of said internal layer with a first ground layer	1	first ground layer
5c	insulation layer	3, 9, 15: electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers.	5	electrically insulating adhesive layer
2b	conductor layer	1, 7, 13: internal layer	2	internal layer
5d	insulation layer	3, 9, 15: electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers.	5	electrically insulating adhesive layer
3b	ground layer	1, 13: a second ground layer formed on a lower surface of (said) internal layer 7: covering a lower surface of said internal layer with a second ground layer	3	second ground layer

5e	insulation layer	3, 9, 15: electrically insulating adhesive layers sandwiched among said internal layer, said first and second ground layers, and said first and second cover layers.	5	electrically insulating adhesive layer
4	<i>conductor layer</i>	2, 8, 14: a second <i>cover layer</i> formed over a surface of said second ground layer	4b	second cover layer
6d, 6e	electronic components			
7a, 7b, 7c	holes connecting conducting layers 1 and 4	5, 11, 17: a plurality of through-holes formed throughout said first ground layer, said ground line, and said second ground layer,	6	through holes